

(FILE 'USPAT' ENTERED AT 15:21:25 ON 20 SEP 1999)  
ACT PROTECTDATA/L

L1 QUE PLU=ON DATA (2A) PROTECT?  
L2 QUE PLU=ON UTILIZ? OR USE? OR USING  
L3 QUE PLU=ON ALLOW? OR PERMI?  
L4 QUE PLU=ON JUDG? OR COMPAR?  
L5 QUE PLU=ON COPYRIGHT? OR COPY OR COPYING OR DUPLICAT?  
L6 ( 398) SEA FILE=USPAT PLU=ON L1 (P) L2 (P) L3  
L7 QUE PLU=ON FORBID? OR PROHIBIT?  
L8 ( 65) SEA FILE=USPAT PLU=ON L6 AND L7  
L9 QUE PLU=ON APPEND? OR ATTACH? OR ADD?  
L10 QUE PLU=ON APPEND? OR ATTACH? OR ADDING? OR ADDED OR AD  
L11 ( 55) SEA FILE=USPAT PLU=ON L8 AND L10 *scanned*  
L12 QUE PLU=ON STOR? OR SAV?  
L13 ( 55) SEA FILE=USPAT PLU=ON L12 AND L11  
L14 QUE PLU=ON INPUT (P) DATA  
L15 QUE PLU=ON ENCRYPT?  
L16 ( 1) SEA FILE=USPAT PLU=ON 5392351/PN *considered*  
L17 ( 0) SEA FILE=USPAT PLU=ON L16 AND (L15 (P) L14)  
L18 QUE PLU=ON DIFFER?  
L19 ( 1) SEA FILE=USPAT PLU=ON L16 AND (L18 (P) DATA)  
L20 ( 5) SEA FILE=USPAT PLU=ON 5832083/PN OR 5796824/PN OR 5761651  
/PN  
L21 ( 5) SEA FILE=USPAT PLU=ON L20 AND (L18 (P) DATA) 6/11/97  
L22 ( 304) SEA FILE=USPAT PLU=ON L6 AND (L18 (P) DATA) AND FY<1997  
L23 QUE PLU=ON AFTER?  
L24 ( 71) SEA FILE=USPAT PLU=ON L22 AND (L18 (P) DATA (P) L23)  
L25 ( 0) SEA FILE=USPAT PLU=ON L24 AND 705/CCLS  
L26 ( 0) SEA FILE=USPAT PLU=ON L24 AND 705/CLAS  
L27 ( 3) SEA FILE=USPAT PLU=ON L24 AND 395/CLAS  
L28 ( 1) SEA FILE=USPAT PLU=ON 5864683/PN AND (L23 (P) L18 (P) DAT  
A)  
L29 ( 1) SEA FILE=USPAT PLU=ON 5862325/PN AND (L23 (P) L18 (P) DAT  
A)  
L30 ( 1) SEA FILE=USPAT PLU=ON 5276876/PN AND (L23 (P) L18 (P) DAT  
A)  
L31 ( 14) SEA FILE=USPAT PLU=ON L24 AND 380/CLAS *scanned*  
L32 ( 1) SEA FILE=USPAT PLU=ON L31 AND (L23 (5A) DATA (5A) L18)  
L33 QUE PLU=ON UPDAT? OR PASTE? OR ADD?  
L34 QUE PLU=ON L33 (3A) DATA  
L35 QUE PLU=ON UPDAT? OR PASTE? OR ADDED OR ADDING# OR ADDS  
L36 ( 0) SEA FILE=USPAT PLU=ON L20 AND (L35 (3A) DATA)  
L37 ( 6) SEA FILE=USPAT PLU=ON 5392351/PN OR 5761651/PN OR 5832083  
/PN  
L38 ( 1) SEA FILE=USPAT PLU=ON L37 AND (L12 (P) L14) *considered*  
L39 QUE PLU=ON L10 OR L33  
L40 QUE PLU=ON PREPAR? OR GENERAT? OR DISPLAY? OR APPEND?  
L41 QUE PLU=ON L39 OR L40  
-----  
L42 1 S 5761651/PN *considered*  
L43 1 S 5832083/PN  
L44 0 S L16 AND (STOR? DATA)  
L45 1 S L16 AND (STOR? (P) DATA)  
L46 QUE PREPAR? OR GENERAT? OR APPEND? OR WORK? OR DISPLAY?  
L47 QUE INPUT? (P) DATA  
L48 0 S L16 AND (L47 (P) L46)  
L49 QUE INPUT?  
L50 1 S L16 AND (L46 (P) L49)

L51 0 S L15 AND L4  
L52 QUE ~~END~~? OR ADD? OR JOIN?  
L53 QUE ~~END~~ A OR INFORMATION#  
L54 QUE APPEND? OR ADDING# OR ADDED OR JOINING OR JOINED  
L55 0 S L16 AND (L54 (P) L53)  
L56 0 S L16 AND L54  
L57 1 S ~~L42 AND (L54 (P) L53)~~ *considered*  
SAVE -L57 PROTECTDATA/L

=> act protectdata/1

L1 QUE PLU=ON DATA (2A) PROTECT?  
L2 QUE PLU=ON UTILIZ? OR USE? OR USING  
L3 QUE PLU=ON ALLOW? OR PERMI?  
L4 QUE PLU=ON JUDG? OR COMPAR?  
L5 QUE PLU=ON COPYRIGHT? OR COPY OR COPYING OR DUPLICAT?  
L6 ( 398) SEA FILE=USPAT PLU=ON L1 (P) L2 (P) L3  
L7 QUE PLU=ON FORBID? OR PROHIBIT?  
L8 ( 65) SEA FILE=USPAT PLU=ON L6 AND L7  
L9 QUE PLU=ON APPEND? OR ATTACH? OR ADD?  
L10 QUE PLU=ON APPEND? OR ATTACH? OR ADDING? OR ADDED OR AD  
DS  
L11 ( 55) SEA FILE=USPAT PLU=ON L8 AND L10  
L12 QUE PLU=ON STOR? OR SAV?  
L13 ( 55) SEA FILE=USPAT PLU=ON L12 AND L11  
L14 QUE PLU=ON INPUT (P) DATA (Scanned images)  
L15 QUE PLU=ON ENCRYPT?  
L16 ( 1) SEA FILE=USPAT PLU=ON 5392351/PN  
L17 ( 0) SEA FILE=USPAT PLU=ON L16 AND (L15 (P) L14)  
L18 QUE PLU=ON DIFFER?  
L19 ( 1) SEA FILE=USPAT PLU=ON L16 AND (L18 (P) DATA) (considered)  
L20 ( 5) SEA FILE=USPAT PLU=ON 5832083/PN OR 5796824/PN OR 5761651  
/PN  
L21 ( 5) SEA FILE=USPAT PLU=ON L20 AND (L18 (P) DATA)  
L22 ( 304) SEA FILE=USPAT PLU=ON L6 AND (L18 (P) DATA) AND FY<1997  
L23 QUE PLU=ON AFTER?  
L24 ( 71) SEA FILE=USPAT PLU=ON L22 AND (L18 (P) DATA (P) L23)  
L25 ( 0) SEA FILE=USPAT PLU=ON L24 AND 705/CCLS  
L26 ( 0) SEA FILE=USPAT PLU=ON L24 AND 705/CLAS  
L27 ( 3) SEA FILE=USPAT PLU=ON L24 AND 395/CLAS  
L28 ( 1) SEA FILE=USPAT PLU=ON 5864683/PN AND (L23 (P) L18 (P) DAT  
A)  
L29 ( 1) SEA FILE=USPAT PLU=ON 5862325/PN AND (L23 (P) L18 (P) DAT  
A)  
L30 ( 1) SEA FILE=USPAT PLU=ON 5276876/PN AND (L23 (P) L18 (P) DAT  
A)  
L31 ( 14) SEA FILE=USPAT PLU=ON L24 AND 380/CLAS (review abstracts)  
L32 ( 1) SEA FILE=USPAT PLU=ON L31 AND (L23 (5A) DATA (5A) L18)  
L33 QUE PLU=ON UPDAT? OR PASTE? OR ADD?  
L34 QUE PLU=ON L33 (3A) DATA  
L35 QUE PLU=ON UPDAT? OR PASTE? OR ADDED OR ADDING# OR ADDS  
OR ADD  
L36 ( 0) SEA FILE=USPAT PLU=ON L20 AND (L35 (3A) DATA)

=> s 5392351/pn or 5761651/pn or 5832083/pn or 5408351/pn or 5555304/pn or  
5796824/pn

1 5392351/PN  
1 5761651/PN  
1 5832083/PN  
1 5408351/PN  
1 5555304/PN  
1 5796824/PN  
6 5392351/PN OR 5761651/PN OR 5832083/PN OR 5408351/PN OR 555

US PAT NO: 5,408,531 [IMAGE AVAILABLE]  
DATE FILED: Sep. 9, 1992  
US-CL-CURRENT: 380/3; 235/379, 380; 380/4, 9, 23, 24,  
49, 50, 54; 714/752, 755, 756

(6)

## SUMMARY:

BSUM(11)

In the aforesaid example, generally, a secret number input by a **user** when the optical card recording/reproducing apparatus is **used**, and a secret number previously recorded on the optical card are read and compared. When they coincide, it is **allowed** to record/reproduce a data. When they do not coincide, it is prohibited to record/reproduce a data. Thus, an apparatus which includes the process of comparing such secret numbers with each other has an effect for **protecting** a data. However, an apparatus which does not include the process of comparing cannot attempt to **protect** a data, so that the data can be recorded/reproduced without constraints. Even if a data was encrypted, the feature that the data. . . .

## DETDESC:

DETD(17)

FIG. 6 shows an example of the case in which a **data** of the information byte has high randomness as an example of the process by the first **data** converting circuit 4. If the rotation is performed within the information byte, there is a high probability in which each **data** of the information byte is **different** from the original **data**. Therefore, the aforesaid formula (2) can be made invalid in each code word. Also, because the condition making the formula. . . . errors cannot be corrected in the decoding circuit 9 at reproducing in an optical card recording/reproducing apparatus excluding the second **data** converting circuit 8 or an apparatus decoding by a **different** rule, so that the **data** cannot be reproduced correctly.

## DETDESC:

DETD(48)

In the aforesaid first embodiment, a rule for **data** conversion by rearrangement of a **data**, such as **data** rotation is provided in each optical card recording/reproducing apparatus 1. It can be also operated as follows. That is, a plurality of **different data** converting means are provided in the optical card recording/reproducing apparatus and a plurality of **data** converting modes within the optical card recording/reproducing apparatus are specified by providing the mode for designating a converting rule of the **data** converting means in a recording/reproducing command from the host computer, so that the **data** cannot be reproduced if a designated mode from the host computer is **different** even if the optical card recording/reproducing apparatus is identical at both cases of recording time and reproducing time, and that the **data** can be protected as in the first embodiment.

## DETDESC:

DETD(54)

In the case in which, a selection of the **data** converting means transmitted to the optical card recording/reproducing apparatus 21 at recording is **different** from the selection at reproducing, the converting mode at the second **data** converting means 23 corresponding to the **data** converting mode at the first **data** converting means 22 is not selected correctly. Therefore, the **data** arrangement or a bit value is not correctly reverted. Then, errors cannot be corrected and the **data** cannot be read.

DETDESC:

DETD(55)

The optical card recording/reproducing apparatus 21 is formed as mentioned above can actualize **different** secret-coding without changing the structure of the apparatus 21 by an alteration of a software on the side of the . . . the software of the host computer within an application system is made to be the same, the compatibility of a **data** for **different** systems is lost and the **data** can be protected between applications.

DETDESC:

DETD(57)

In the aforesaid first and second embodiments, a rule of **data** conversion is set at every host computer and every optical card recording/reproducing apparatus; however, a rule of **different** **data** conversion can be set in each optical card. This will be explained concretely on the basis of FIG. 11 as follows. FIG. 11 shows the structure of a controller which controls the recording and reproducing operations of the **data** from the optical card.

DETDESC:

DETD(63)

If the secret number which is **different** from that of the recording time is stored, the conversion irrespective of the recording time is executed. Accordingly, the EDAC circuit 37 is impossible to correct errors. In this case, **data** transmission from the EDAC circuit 37 to the first buffer 36 is prohibited. If it is possible to correct errors in the **data** transmitted from the **data** converting circuit 38 to the EDAC circuit 37, the **data** is temporarily stored in the first buffer 36 and transmitted to the host computer 33 by the first DMA circuit 34. When the **data** is transmitted, the host computer 33 displays a **data** read by, for example, displaying means 47.

DETDESC:

DETD(68)

Thus, if the rotation of a bit unit is applied to the information byte, almost all bytes having **different** **data** indicating the byte before and **after** the rotation. Therefore, in the case (except that an inverse process is executed for the **data** conversion by this rotation), if the **data** is reproduced, errors are generated exceeding a correcting ability of an error correcting code. Accordingly, the error cannot be corrected, so that a **data** cannot be read.

DETDESC:

DETD(70)

In . . . interchanged. In this operation, errors are generated

exceeding the correcting ability of the error correcting code at the reproduction because data representing bytes are different between before and after the replacement in most of the bytes. Accordingly, the errors cannot be corrected, so that data cannot be read.

DETDESC:

DETD(71)

FIG. . . . every byte unit in each divided unit. FIG. 14a shows a case before the rotation. FIG. 14b shows a state after the rotation in the right direction of one byte in every divided range in which information bytes are divided into groups of three bytes. In this operation, when a data is reproduced, the errors are generated exceeding the correcting ability of the error correcting code because the data representing bytes are different before and after the rotation. Accordingly, errors cannot be corrected and the data cannot be read.

DETDESC:

DETD(76)

That is, the data of one byte (eight bits) output from the coding circuit 2 is supplied to the first data converting circuit 4. The first data converting circuit 4 has inverters 81 and 81 which invert the second bit and sixth bit from LSB for a data of one byte to be input. Also, the first data converting circuit 4 has the structure for feeding the data as it is to the recording means 5 without inverting the other bits. In this way, such simple structure is able to actualize data conversion. Also, because the data of all bytes are different from the original data, the code words executed by such conversion become impossible to correct errors, so that a data cannot be read as in the aforesaid examples.

=> d

1. 5,408,531, Apr. 18, 1995, Information recording/reproducing apparatus for converting and processing data exceeding error correction ability at recording; Yoshio Nakajima, 380/3; 235/379, 380; 380/4, 9,